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BULLETIN
OF THE
CHICAGO ACADEMY OF SCIENCES

MAMMALS FROM SOUTH-CENTRAL ARIZONA

By

DONALD M. HATFIELD



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The Bulletin of the Chicago Academy of Sciences was initiated in 1883 and volumes 1 to 4 were published prior to June, 1913. During the following twenty-year period it was not issued. Volumes 1, 2, and 4 contain technical or semi-technical papers on various subjects in the natural sciences. Volume 3 contains museum reports, descriptions of museum exhibits, and announcements.

Publication of the *Bulletin* was resumed in 1934 with volume 5 in the present format. It is now regarded as an outlet for short to moderate-sized original papers on natural history, in its broad sense, by members of the museum staff, members of the Academy, and for papers by other authors which are based in considerable part upon the collections of the Academy. It is edited by the Director of the Museum with the assistance of a committee from the Board of Scientific Governors. The separate numbers are issued at irregular intervals and distributed to libraries and scientific organizations, and to specialists with whom the Academy maintains exchanges. A reserve is set aside for future need as exchanges and the remainder of the edition offered for sale at a nominal price. When a sufficient number of pages have been printed to form a volume of convenient size, a title page, table of contents, and index are supplied to libraries and institutions which receive the entire series.

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MAMMALS FROM SOUTH-CENTRAL ARIZONA

BY

DONALD M. HATFIELD

Two collections of small mammals from south-central Arizona resulted from field work by members of the museum staff of the Chicago Academy of Sciences in 1937 and 1940. The material obtained in the vicinity of Wickenburg and Yarnell (Yavapai County, April-June, 1937) was collected and prepared chiefly by Roy V. Komarek, then an assistant curator at the Academy; that obtained near Superior (Pinal County, May-June, 1940), by Thurston I. Wright, preparator. A series of pocket gophers collected in Peebles Valley, near Yarnell, apparently represents a new subspecies which is herein described.

The field work of 1940 was made possible by the generosity of James R. Offield, a trustee, and John Y. Beaty, a life member, of the Academy. The museum is grateful to these men and to the following residents of Arizona who extended courtesies to members of the field parties: S. L. Lewis, State Game Warden, Phoenix; Vic H. Housholder, Phoenix; E. J. Pike, Yarnell; Frederick Gibson, director of the Boyce Thompson Southwestern Arboretum, Superior; and Frank Grubb, District Supervisor, Crook National Forest, Safford.

To Dr. H. H. T. Jackson I wish to express appreciation for allowing me to examine topotype specimens of *Thomomys* in the Biological Surveys Collection. I also wish to thank Dr. E. R. Hall of the Museum of Vertebrate Zoology, Dr. R. T. Orr of the California Academy of Sciences, G. Willett and J. C. von Bloeker of the Los Angeles Museum, A. M. Bailey of the Colorado Museum of Natural History, and K. P. Schmidt and W. J. Beecher of the Field Museum of Natural

History, for permission to examine specimens in their care. My especial thanks go to Dr. S. B. Benson of the Museum of Vertebrate Zoology who assisted in the identification of the pocket mice, genus *Perognathus*.

LOCALITIES

The principal localities in which collections were made are indicated on the accompanying sketch maps (Fig. 1 and 2). They have been described in published narratives of the field trips (Gloyd, 1937, p. 10, 18, 24; 1940, p. 68, 118) and may be characterized briefly as follows:

Five miles north of Wickenburg, Yavapai County: Elevation 2800 feet; near box canyon on the Hassayampa River; Lower Sonoran life zone. This locality is a typical desert habitat, with the usual desert vegetation: mesquite, ocotillo, saguaro, cholla, creosote bush, and prickly pear (Fig. 3 and 4). The daily temperature range is great; during the period of collecting of which the results are here recorded, the temperature went as low as 34° F. and as high as 104° F.

Yarnell, Yavapai County: Elevation 4877 feet; on the southwestern edge of the central plateau of Arizona, 25 miles north of Wickenburg; Upper Sonoran-Transition. This is a mountain habitat, with large granite boulders, and with scrub oaks, manzanita, soapberry, and mountain mahogany the dominant plant species (Fig. 5).

Peebles Valley, six miles north of Yarnell, Yavapai County: Elevation 4400 feet; an upland basin enclosed on the south and west by the Weaver Mountains and on the east by the Sierra Prieta; Upper Sonoran. This is somewhat like the Great Plains region in its flora and fauna; grass and cottonwoods, meadowlarks and horned larks are common (Fig. 6). There was a prairie dog colony at its eastern edge.

Boyce Thompson Southwestern Arboretum, four miles west of Superior, Pinal County: Elevation 2500 feet; at the northeastern base of Picketpost Mountain; Lower Sonoran. A desert habitat, this area supports saguaro, ocotillo, cholla, mesquite, palo verde, and acacia among the plants (Fig. 7), and phainopeplas, cactus woodpeckers, verdins, and elf owls among the birds. Maximum temperatures were high, ranging from 90° F. to over 100° F. during the latter half of May when collecting was carried on.

Columbine Ranger Station, on Mount Graham, Graham County: Elevation 9500 feet; Transition. This region is heavily forested with Douglas fir, white fir, ponderosa pine, and aspen (Fig. 8).

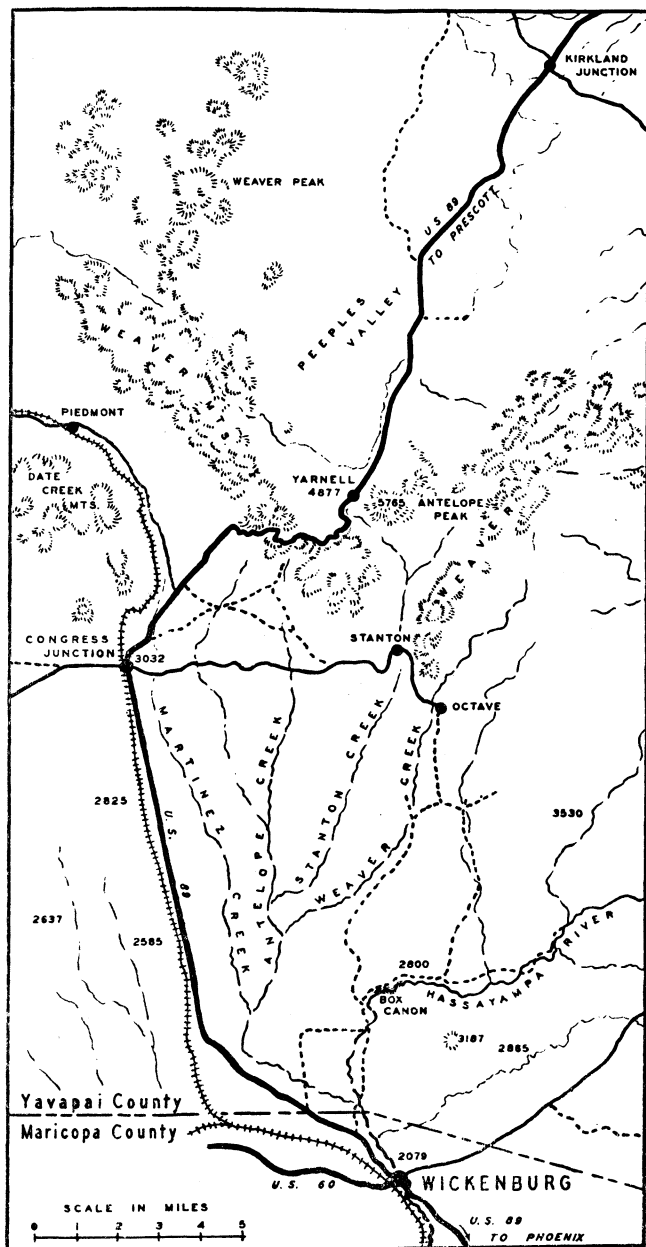


Fig. 1. Sketch map of the Wickenburg-Yarnell region showing localities mentioned in the text. Traced from a large scale map of Yavapai County through the courtesy of R. L. Merritt, County Engineer.

LIST OF SPECIES

In the following list, localities and dates of capture are recorded for each form, a new race of pocket gophers is described, certain selected measurements (in millimeters) are presented, and occasional points of interest concerning geographic variation are discussed.

Myotis velifer velifer (J. A. Allen). Cave Bat.

From a mine shaft five miles north of Wickenburg, on May 7, 46 specimens were taken—nineteen males and twenty-seven females. The sexes were found together and the females were without embryos, possibly indicating either that the breeding season occurs earlier in the year and that the young have reached adult size by early May, or that the sexes were together for breeding purposes.

Close examination of the pelage reveals that there is a perceptible "bald spot" over the region of the shoulder blades in all specimens of this bat in the collections of the Academy. Examination of specimens elsewhere showed that the great majority of individuals of this race possess this same character. What its significance may be I do not know, but its presence on specimens in various collections indicates that it is not merely the result of faulty preparation or packing.

Myotis volans interior Miller. Western Little Brown Bat.

One specimen, a female, was captured at Yarnell, Yavapai County, on June 5.

Myotis californicus californicus (Audubon and Bachman).

Little California Bat.

Two females, each containing a well-developed embryo, were obtained at Yarnell on June 7.

Pipistrellus hesperus hesperus (H. Allen). Little Canyon Bat.

Two adult females, one from five miles north of Wickenburg, the other from Yarnell. These are typical *hesperus*, showing little of the brownish coloration which distinguishes the race to the south. The status of the pipistrelles in southern Arizona and northwestern Mexico has been a matter of discussion. Burt (1933) stated that these were members of the subspecies *Pipistrellus hesperus merriami* and that Elliot's race *apus* should be synonymized thereunder. After examination of material in the course of a revisionary study of the species *hesperus*, I came to the conclusion (1936) that *apus* more properly belongs in the synonymy of

australis, a conclusion with which Burt (1938) seems in complete disagreement. However, a study of the type and three additional specimens of *apus* reveals that they are, to my eye, less reddish in color than *merriami* and that they have the narrow braincase, actually and relatively (52.1 per cent of length of skull), which is characteristic of *australis*. Their size, slightly larger than typical *australis*, I take to indicate their relationship with *maximus*, to the northeast.

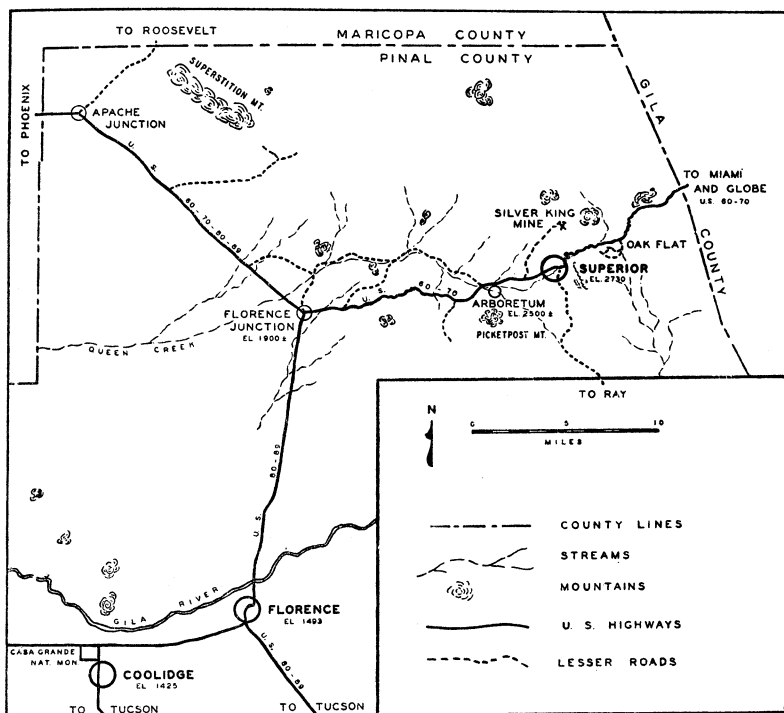


Fig. 2. Sketch map of the Florence-Superior region showing localities mentioned in the text. Traced from a large scale map of Pinal County through the courtesy of L. O. Fiscel, County Engineer.

***Eptesicus fuscus fuscus* (Peale and Beauvois). Large Brown Bat.**

One female, taken five miles north of Wickenburg on May 4, seems to agree in every respect with typical *fuscus* from other areas. The measurements are in no way out of the ordinary with the possible exception of length of forearm, which is greater than average. The measurements follow: total length 112; length of tail 50; length of hind foot

12; length of forearm 48.9; greatest length of skull 20.1; zygomatic breadth 12.8; breadth of braincase 9.4; alveolar length of maxillary toothrow 7.5.

***Corynorhinus rafinesquii pallescens* Miller.** Pale Lump-nosed Bat.

One female, collected on June 8 in the entrance to an abandoned mine on Martinez Creek, 7 miles southwest of Yarnell. Apparently this was a solitary individual; no others were seen at the time. Compared with specimens from Camp Verde, Yavapai County, this is somewhat darker in coloration and slightly more buffy in the pectoral region.

***Antrozous pallidus pallidus* (Le Conte).** Desert Pallid Bat.

Seven specimens, all females, were captured on May 28, 29, 31, and June 2 at the Arboretum near Superior, Pinal County. One contained a nearly full term foetus; the rest were not evidently pregnant. Compared with specimens from California and Texas, these have longer forearms. Average and extreme measurements given below will indicate this difference. Five females from San Diego County, California: total length 112.3 (103-122); length of forearm 50.9 (50.6-51.4). Fourteen females from Texas (measurements averaged from Miller, 1897, p. 46): total length 109.7 (105-115); length of forearm 50.3 (49-51). Six females from Superior, Arizona: total length 112.7 (107-119); length of forearm 53.4 (50.7-55.5). The ratio of length of forearm to total length is 45.3 per cent in the California specimens, 45.8 per cent in the Texas specimens and 47.4 per cent in the Arizona specimens.

***Tadarida mexicana* (Saussure).** Mexican Free-tailed Bat.

A single male was obtained on May 8 five miles north of Wickenburg. It was captured in the mine shaft from which the *Myotis velifer* were taken. Aside from the fact that the skull is broader than usual for the species (zygomatic breadth 10 mm., braincase breadth 8.8 mm.), the specimen is typical of the species.

***Bassariscus astutus arizonensis* Goldman.** Arizona Cacomistle.

One skull only, five miles north of Wickenburg.

***Taxidea taxus berlandieri* (Baird).** Badger.

An adult female and an immature female from eight miles northeast of Congress Junction, Yavapai County. The skull of the adult is peculiar in that the lower jaw, although definitely matching the rest of the



Fig. 3. Valley of the Hassayampa River, Yavapai County, between the box canyon and Wickenburg.

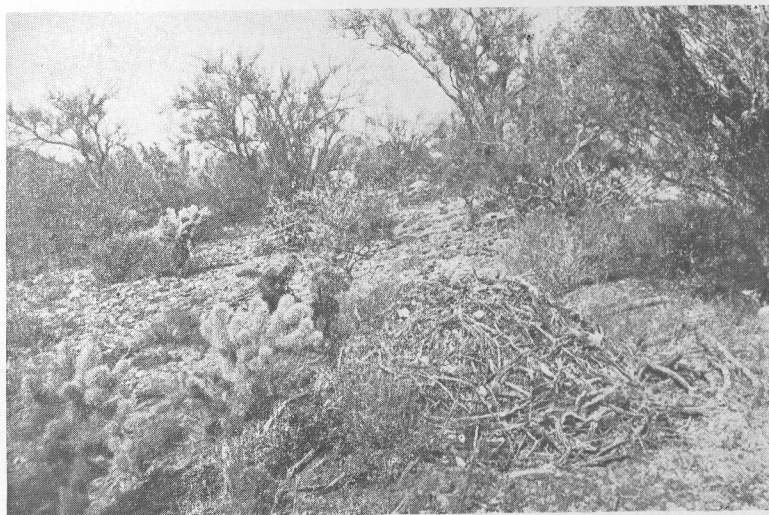


Fig. 4. Desert floor near the box canyon, 5 miles north of Wickenburg. House of *Neotoma* in foreground.

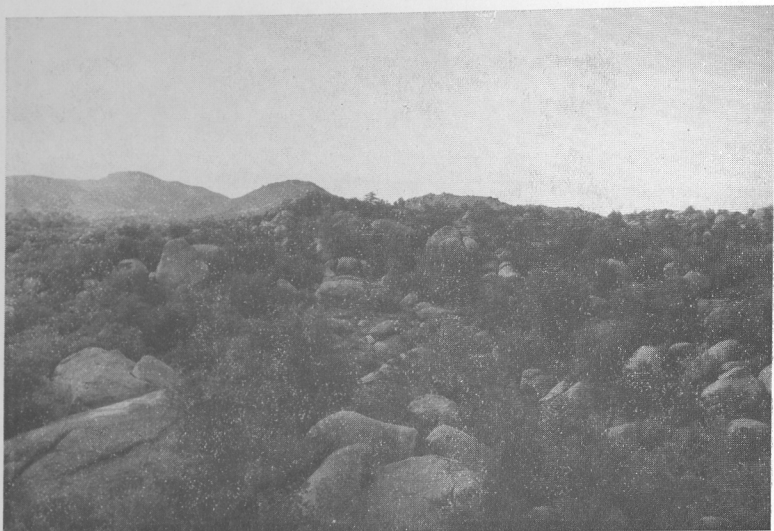


Fig. 5. Granite boulder area near Yarnell, Yavapai County, with thickets of oaks, manzanita, mountain mahogany, etc.

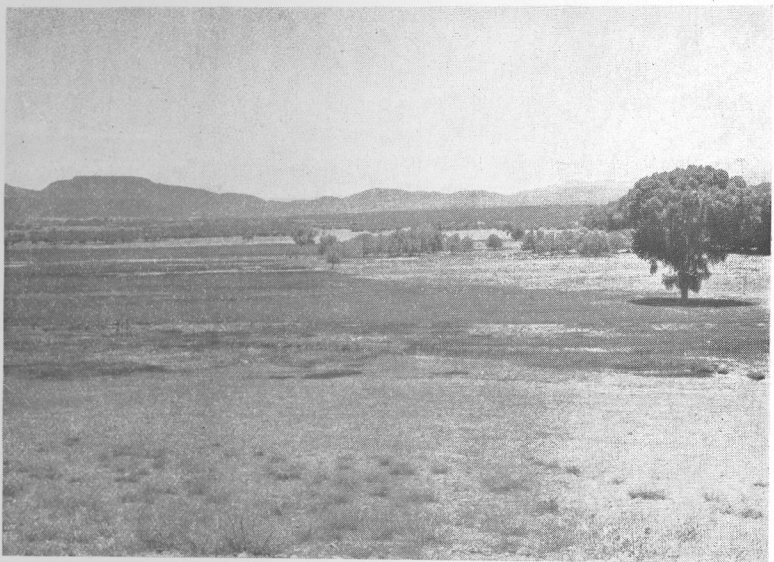


Fig. 6. Peebles Valley, 6 miles north of Yarnell, an upland basin with cottonwoods and plains grassland.

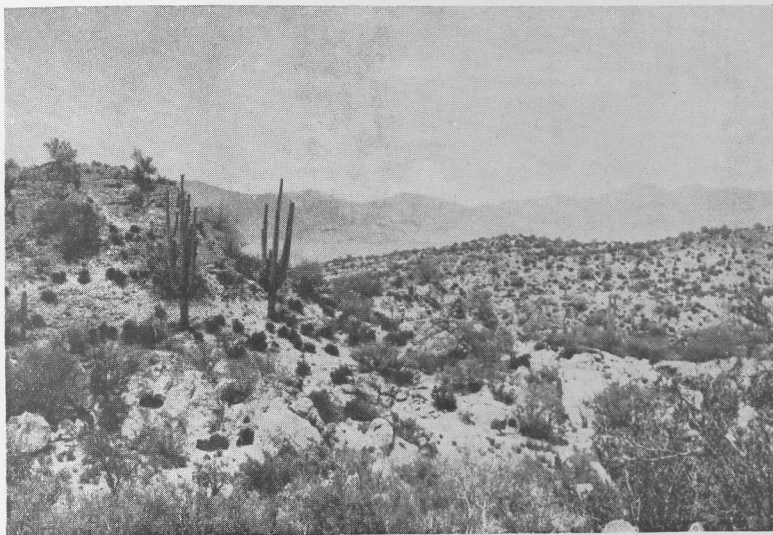


Fig. 7. Desert foothills, 6 miles west of Superior, Pinal County, near Picketpost Mountain.

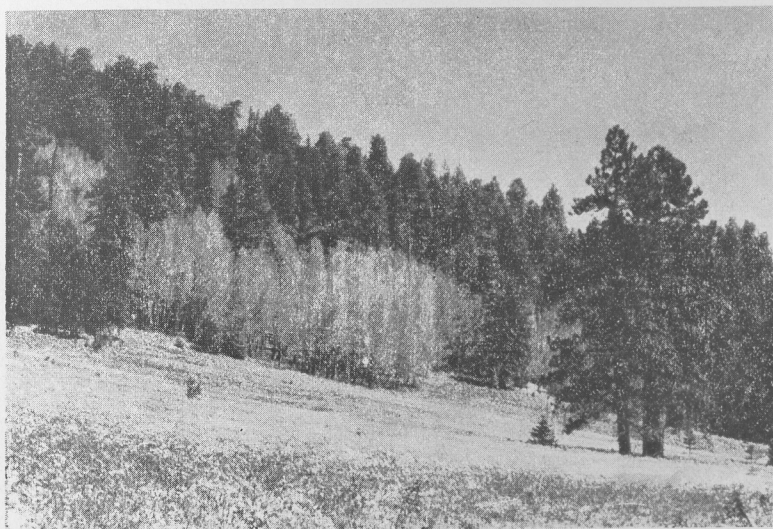


Fig. 8. A mountain meadow in the vicinity of Columbine Ranger Station, Mt. Graham, Graham County. Elevation about 9600 feet.

skull, seems too short. The lower incisors do not meet those on the upper jaw and M_2 is so much posterior to M^1 as to be rendered apparently useless. In the immature skull, milk dentition persists for the molariform teeth above and below and for the upper left canine. However, the permanent teeth have begun to erupt and the upper and lower molars are plainly seen. It is interesting to note that it is the second molariform tooth above and the third below which form the carnassials in the milk dentition, while in the permanent dentition the third tooth above (Pm^4) and the fourth tooth below (M_1) perform the sectorial function.

Compared with specimens of *berlandieri* from Yuma and Coconino counties, Arizona, the two from Congress Junction possess narrower skulls. However, this can hardly be held to have significance since Hall (1936) reports that he has found only color and average size to be of taxonomic worth. Also, the same author states that "... skull differences . . . are ones of average size."

Citellus variegatus grammurus (Say). Say's Rock Squirrel.

Ten specimens, two of which are immature, were obtained from the following localities: 6 miles north of Yarnell, Yarnell, 7 miles south-east of Octave, and 5 miles north of Wickenburg, all in Yavapai County; one adult male was captured at Columbine, Graham County.

In general, the series agrees well with Howell's description of the race (1938). The two immature individuals, taken on May 31 and June 7, have fresh, unworn pelage; the head and occiput are "pinkish buff, faintly shaded with fuscous." The adults, except for the Graham County specimen, were all taken during May (1-29) and all have well-worn pelage with much of the blackish-brown basal portion of the hair showing. There is considerable variation among these; one from five miles north of Wickenburg has the rump preponderantly dark seal brown in color. Others from the same locality have the rump typically cinnamon buff.

The specimen from Columbine seems to show a tendency toward *rupestris*. Its head and shoulders are brownish in fresh pelage; the skull is larger than typical *grammurus* and resembles that of *rupestris* in shape, although the molariform teeth are relatively small. The back and tail have only a very slight buff wash, hence this appears to be one of the occasional gray-backed specimens from the Graham Mountains to which Howell (*loc. cit.*) refers.

Average and extreme measurements for the Yavapai County specimens (four males and three females) follow: total length 451.4 (431-481); length of tail 182.6 (172-199); length of hind foot 54.7 (51-60); greatest length of skull 60.0 (58.0-61.2); palatilar length 28.7 (27.8-29.3); zygomatic breadth 37.8 (35.9-39.1); breadth of braincase 24.7 (23.9-25.7); interorbital breadth 13.7 (13.0-14.5); length of nasals 20.8 (19.6-23.5); alveolar length of maxillary toothrow 12.3 (11.7-12.7). Comparable measurements of the Graham County specimen are as follows: total length 497; length of tail 213; length of hind foot 57; greatest length of skull 63.3; palatilar length 29.8; zygomatic breadth 40.3; breadth of braincase 26.3; interorbital breadth 14.9; length of nasals 20.9; maxillary toothrow 11.7.

***Citellus harrisi harrisi* (Audubon and Bachman).**

Gray-tailed Antelope Squirrel.

Four adult specimens, one male and three females, from five miles north of Wickenburg; thirteen specimens, three adult and ten immature, from Superior. In addition, seven captive young were brought back from the latter locality. At present date two of these are still under observation in the Academy laboratory.

The four adults from five miles north of Wickenburg are somewhat lighter in color than those from Superior, perhaps indicating intergradation with *saxicola* to the southwest.

***Citellus tereticaudus neglectus* (Merriam).**

Arizona Round-tailed Ground Squirrel.

Two specimens, a male and a female, were acquired from two miles north of Wickenburg on May 10. One, a male, was captured near the Casa Grande National Monument on April 27.

There is considerable variation in color among the three specimens, but no more than is to be found in any series of this race. The plantar fur is dark in the two Wickenburg specimens and almost white in the Casa Grande specimen.

***Cynomys gunnisoni zuniensis* Hollister.** Zuni Prairie-dog.

From six miles north of Yarnell (Peoples Valley), three adult females and six young. Dates of capture: May 28, 29, 30.

***Eutamias dorsalis dorsalis* (Baird).** Cliff Chipmunk.

Eight individuals, of which four are adult males and two are adult females. Localities and dates of capture: Yarnell, May 22, 23, 24,

and 26; Arboretum (Superior), May 28; Columbine (Mt. Graham), June 4 and 5.

Of the adults from Yarnell, two are undergoing the spring molt, while the third has completed it. The Superior specimen is also in the process of molt. The spring pelage, as stated by Howell (1929) and as revealed by this material, is a progressive molt from front to back; the rump hair is the last to be replaced.

The specimens from Columbine are in fresh pelage but, peculiarly, one adult has typical summer fur while the other has what appears to be typical winter fur. The post-auricular patches of the specimens from Columbine are notably whiter than those of the Yarnell individuals, in which they have a decidedly buffy cast.

Tamiasciurus fremonti grahamensis (Allen). Mt. Graham Pine Squirrel.

One adult male from Columbine, Mt. Graham, Graham County. It was obtained on June 5.

A series of pocket gophers collected in Peebles Valley, six miles north of Yarnell, Yavapai County, apparently represents a hitherto unknown race, which may be named and characterized as follows:

Thomomys bottae operosus, new subspecies

Type.—Female, adult, skin and skull; Chicago Academy of Sciences no. 4061; 6 mi. N. Yarnell (Peebles Valley), Yavapai Co., Arizona; May 30, 1937; collected by Roy Komarek.

Range.—Known only from the type locality.

Diagnosis.—Size: Large (see measurements). Color: Hairs Plumbeous* basally; tips Cinnamon on the back, Pinkish Buff on the sides. Middorsal area and top of head blackish, ear surrounded by black. Skull: Broad, with widely spreading zygomatic arches.

Comparisons.—From *Thomomys bottae fulvus*, as represented by topotype material, *operosus* differs in being larger, with more widely spreading zygomatic arches, heavier dentition, and greater mastoid breadth. From *Thomomys bottae mutabilis*, as known to me through topotypes, *operosus* differs

*Capitalized terms from Ridgway, Color Standards and Color Nomenclature, 1912, Washington, D. C.

in being darker, with more black on the nose, occiput, and back. Compared with *Thomomys bottae patulus* and *Thomomys bottae desitus*, *operosus* is seen to be much darker and to have a longer tail and greater zygomatic breadth than either.

Measurements.—Average and extreme measurements, in millimeters, of eight adult females are: total length 216.5 (202-234); length of tail 71.4 (65-79); length of hind foot 27.4 (26-29); basilar length of Hensel 32.7 (31.2-34.0); zygomatic breadth 24.0 (23.3-24.6); mastoid breadth 19.6 (18.9-20.2); interorbital constriction 6.9 (6.5-7.7); length of nasals 12.9 (11.9-13.7); alveolar length of maxillary toothrow 8.4 (8.3-8.9). Measurements of three adult males are: total length 232.3 (228-237); length of tail 81.3 (80-82); length of hind foot 29; basilar length of Hensel 37.3 (36.8-37.7); zygomatic breadth 27.1 (26.9-27.2); mastoid breadth 21.1 (20.7-21.3); interorbital constriction 7.0 (6.8-7.3); length of nasals 15.2 (14.8-15.4); alveolar length of maxillary toothrow 8.8 (8.6-9.1).

Specimens examined.—Total number 12, from the type locality, all in the collection of the Chicago Academy of Sciences.

Remarks.—Peeples Valley is an isolated pocket midway between the desert country of southern, and the high plateau country of northeastern Arizona. As such it has provided a situation in which the more or less sedentary pocket gophers might be expected to show effects of isolation.

Thomomys bottae grahamensis (Goldman). Mt. Graham Pocket Gopher.

Eight individuals, of which five are adult females, one is an adult male, and two are young, were obtained from Mt. Graham, Graham County. The dates of capture were June 6 and 7. The single male is gray in color, with very little of the pronounced fuscous which is typical of this race.

Thomomys bottae patulus Goldman. Hassayampa Pocket Gopher.

From five miles north of Wickenburg (on the Hassayampa River), two females and one male, obtained on May 1 and 3.

Perognathus flavus bimaculatus (Merriam). Yavapai Pocket Mouse.

One specimen, a male, was obtained 6 miles north of Yarnell on June 5.

Perognathus amplius jacksoni Goldman. Jackson's Pocket Mouse.

Three males and two females from five miles north of Wickenburg; two males (one alcoholic) from Florence Junction; one female from

Superior. Dates of capture extend from April 30 through May 24. The three specimens from Pinal County have the pelage of the rump more suffused with black than have those from Yavapai County. Also, the former have shorter nasals and lesser interorbital width.

***Perognathus baileyi baileyi* Merriam.** Bailey's Pocket Mouse.

Of this large pocket mouse, fourteen individuals were collected. Thirteen of these are from Superior, while one is from five miles west of Apache Junction, Maricopa County. Also, I had opportunity to examine nineteen specimens of this race from Superior in the collection of the Colorado Museum of Natural History.

Compared with material representing this race from the Santa Rita Mountains, Pima County, these specimens are somewhat darker in color. From topotypes of *baileyi*, these from Superior differ in having greater interorbital width and shorter nasals. Average and extreme measurements of six adult males from Superior: total length 217.0 (207-224); tail 123.8 (121-129); hind foot 27.0 (26-28); basilar length of Hensel 21.6 (20.8-22.2); mastoid breadth 15.9 (15.1-16.2); interorbital breadth 7.2 (7.0-7.5); length of nasals 11.9 (11.5-12.5). Of five adult females from the same locality: total length 208.8 (201-226); tail 116.8 (114-118); hind foot 26.4 (25-27); basilar length of Hensel 21.2 (20.8-21.8); mastoid breadth 15.7 (15.4-16.0); interorbital breadth 7.5 (7.2-7.7); length of nasals 11.3 (10.8-11.9).

***Perognathus penicillatus pricei* (Allen).** Price's Pocket Mouse.

Three females and two males, all adult, from five miles north of Wickenburg. Dates of capture, May 1, 3, 8, and 13.

***Perognathus intermedius umbrosus* Benson.**

Dark Intermediate Pocket Mouse.

Two specimens, a male and a female, from Yarnell. Obtained on May 23 and 27.

***Dipodomys merriami merriami* Mearns.** Merriam's Kangaroo Rat.

Twenty-one specimens, nineteen of which were taken five miles north of Wickenburg. The other two were obtained three miles north of Florence, and two miles south of Florence Junction, Pinal County. The Wickenburg skins are dated from April 30 to May 18; the two from near Florence, May 24 and 29.

In this series, the dorsal skin gland is more extensive in area and more protuberant in the males than in the females. It appears to be

completely absent in three of the eight adult females, at least close scrutiny revealed no trace of it. All of the males bear the gland.

It is interesting to note that the number of kangaroo rats captured in 1937 so far exceeds the number caught in 1940 (the two from the vicinity of Florence). It would seem that there may have been a considerable decrease in the population as a whole. It is uncertain what factors may have been responsible for this decrease, although the excessive dryness of the three years preceding 1940 may have contributed. The winter of 1940-41 was characterized by an unusual amount of rain in the vicinity of Superior and Florence. Dr. H. K. Gloyd, who spent part of June and July of 1941 at the Arboretum, states that this year kangaroo rats were seen more abundantly along the highway. However, during July, 1941, I travelled over 4000 miles of highway within *Dipodomys* territory and saw but two individuals dead on the road. On a similar trip in 1939, I noted an average of one dead individual every 29 miles on a stretch of 600 miles.

It may be that these apparent fluctuations reflect merely a reaction to strictly local conditions. On the other hand they may indicate cyclic behavior in the larger sense.

Onychomys torridus torridus (Coues). Arizona Grasshopper Mouse.

An adult female was obtained on the Santa Rita Range Reserve, Pima County.

Onychomys torridus perpallidus Mearns. Pallid Grasshopper Mouse.

Nine specimens (six males and three females) collected five miles north of Wickenburg. With one exception, these are typical *perpallidus*. The exception, an adult male, is markedly reddish, perhaps indicating intergradation with *torridus* to the southeast. The skulls of two show the concave, spineless posterior edge to the hard palate which Hollister (1914) gives as one of the characters normally separating the race *torridus* from the race *perpallidus*. The other seven (including the reddish one mentioned above) all have the palate spine.

Reithrodontomys megalotis megalotis (Baird). Desert Harvest Mouse.

One, a male, was captured six miles north of Yarnell on June 9.

Peromyscus eremicus eremicus (Baird). Desert Mouse.

From five miles north of Wickenburg, five males and eleven females. Dates of capture, April 30 to May 12. Average and extreme measurements of five males: total length 188.4 (177-195); tail 103.0 (93-110);

hind foot 20.0 (19-21); greatest length of skull 25.2 (24.9-25.6); interorbital constriction 4.1 (3.9-4.2); length of nasals 8.9 (8.5-9.5); alveolar length of molariform tooththrow 3.9 (3.8-4.0). Five females: total length 196.4 (188-202); tail 106.8 (99-112); hind foot 20.0 (19-21); greatest length of skull 25.4 (24.8-25.9); interorbital constriction 4.1 (3.9-4.3); length of nasals 9.3 (9.0-9.6); alveolar length of molariform tooththrow 3.9 (3.8-4.0).

From Superior, nineteen specimens, of which nine are adult females, four are adult males, and six are young. Dates of capture, May 25, 27, and 28. Aside from a very slight difference in average coloration (these are darker), this series seems indistinguishable from the Wickenburg series mentioned above.

***Peromyscus maniculatus rufinus* (Merriam).** Tawny White-footed Mouse.

Seven specimens, of which three are alcoholics and four are skins and skulls, were collected June 4 at Columbine, Mt. Graham, Graham County.

***Peromyscus boylii rowleyi* (Allen).** Rowley's White-footed Mouse.

Twenty-three individuals of this race were obtained at Yarnell. The presence of *rowleyi* at Yarnell and of *eremicus* at five miles north of Wickenburg, a bare twenty miles to the south, indicates clearly the marked difference, environmentally, between these two areas. The latter is typically a desert habitat, with saguaro, cholla and yucca abundant. Yarnell, on the other hand, is a high (4877 feet) rocky area supporting such plants as manzanita, mountain mahogany, scrub oaks, baccharis and soapberry.

Average and extreme measurements of thirteen males: total length 200.1 (191-210); tail 104.0 (96-113); hind foot 21.5 (21-23); greatest length of skull 27.9 (26.5-28.7); interorbital constriction 4.6 (4.4-4.7); length of nasals 11.2 (10.7-11.8); alveolar length of molariform tooththrow 4.3 (4.0-4.6). Eight females: total length 202.8 (178-212); tail 106.5 (84-116); hind foot 21.8 (21-23); greatest length of skull 28.4 (27.8-29.0); interorbital constriction 4.7 (4.4-5.0); length of nasals 11.1 (10.7-11.9); alveolar length of molariform tooththrow 4.3 (4.0-4.6).

***Neotoma albigula albigula* Hartley.** White-throated Wood Rat.

Seven (three females and four males) were captured six miles north of Yarnell (Peoples Valley) on June 7 and 9. Twelve (five females and seven males) were taken five miles north of Wickenburg, and twenty-four (seventeen females and seven males) at Superior. Of those from six

miles north of Yarnell, one was infested with a bot-fly larva in the region of the throat, while four of the twelve from five miles north of Wickenburg and eleven of the twenty-four from Superior were similarly parasitized. Swarth (1929) found that one third of the specimens of *albigula* obtained by him in Arizona were infested. He notes a higher percentage in June.

Microtus alticola leucophaeus (Allen). Mt. Graham Meadow Mouse.

An adult female was taken at Columbine, Mt. Graham, on June 7.

Lepus californicus deserticola (Mearns). Colorado Desert Jack Rabbit.

From five miles north of Wickenburg, two adult males, one adult female, and one young male. Dates of capture, April 29, May 14 and 16. From two miles west of Octave, Yavapai County, one adult male, taken June 1.

Sylvilagus auduboni arizonae (Allen). Arizona Cottontail Rabbit.

One adult male was captured at Yarnell; two adult females and an immature male at five miles north of Wickenburg; one subadult male at Superior, and one immature male on the Santa Rita Range Reserve, Pima County.

LITERATURE CITED

- Burt, W. H.
1933 Additional notes on the mammals of southern Arizona. *Jour. Mammalogy*, vol. 14, p. 114-122.
1938 Faunal relationships and geographic distribution of mammals in Sonora, Mexico. *Univ. Mich. Mus. Zool., Misc. Publ. no. 39*, p. 1-77.
- Doutt, J. K.
1933 A systematic study of a collection of mammals from southern Arizona. *Ann. Carnegie Mus.*, vol. 23, p. 241-274.
- Gloyd, H. K.
1937 The Chicago Academy of Sciences Arizona Expedition April-June, 1937. *Program of Activities, Chicago Acad. Sci.*, vol. 8, p. 1-26.
1940 In saguaro land. *Chicago Nat.*, vol. 3, p. 67-78, 111-124.
- Hall, E. R.
1936 Mustelid mammals from the Pleistocene of North America with systematic notes on some recent members of the genera *Mustela*, *Taxidea* and *Mephitis*. *Carnegie Inst. Washington Publ. no. 473*, p. 41-119 (Nov. 20).
- Hatfield, D. M.
1936 A revision of the *Pipistrellus hesperus* group of bats. *Jour. Mammalogy*, vol. 17, p. 257-262.
- Hollister, N.
1914 A systematic account of the grasshopper mice. *Proc. U. S. Nat. Mus.*, vol. 47, p. 427-489.
- Howell, A. H.
1929 Revision of the American chipmunks. *North Amer. Fauna*, no. 52, p. 1-157.
1938 Revision of the North American ground squirrels. *North Amer. Fauna*, no. 56, p. 1-256.
- Swarth, H. S.
1929 The faunal areas of southern Arizona: a study in animal distribution. *Proc. Calif. Acad. Sci.*, vol. 18, p. 267-383.